

January 1982
Single Copies \$2

the RAINBOW

5803 Timber Ridge Drive • Prospect, KY 40059

VOL. 1 NUMBER 7

EDITOR'S NOTES

We're not going to take the U.S. Postal Service to task, but we'd like to follow up on some comments from last month and explain just what happened.

The innocent little comment that bulk rate mail would delay the RAINBOW forgot, frankly, to include the Christmas season. So, for all of you used to receiving your favorite computer magazine right after the first of the month, the delay was understandably worrisome. We received a couple of calls and several letters. By now, however, everyone should have received his or her December issue. If you have not, please let us know. We'll send another out first class mail.

(Continued on Page 9)

Software Reviews...

WORD PROCESSING -- A COMPARISON OF FOUR DIFFERENT SYSTEMS

By Lawrence C. Falk

Word processing is a new buzzword that is sweeping the businesses and offices of the Western world. Its the newest "thing" and only a short perusal of any business-oriented magazine will find dozens of advertisements for word processing systems.

You can buy a dedicated word processor from someone like IBM for \$36,000. Or you can buy software for your trusty Color Computer for as little as \$19.95 that will handle words almost as well. When you figure you have to buy a printer, too, it still means you can get into word processing for as little as 1/36 the cost of the IBM System-6 processor.

In some ways, a typewriter is a word processor. It allows you to get

(Continued on Page 11)



From OH, GOB! ... Full Listing Inside

A Look at Word Processors...
Part 2, Fantasy Game Aids...
A Practical Series...
Another New Game...
Hints and Tips...
Product Reviews...
And More...

SHUFFLE OFF TO CARDS...OF COURSE

Here's a program designed specifically for the 4K Color Computer that, through some excellent programming technique, allows you to really conserve memory and do something that, normally, would be too memory-expensive.

For those of you with more memory to play with, this routine will allow you to get a little more fancy with the rest of the RAM. It comes from Wayne Diercks at Rainbow Connection Software.

Rainbow Connection Software isn't affiliated with the RAINBOW, but, with this kind of useful programming, maybe it should be. At any rate, we'll let Wayne explain this routine in some detail:

"In attempting to design an AUTHENTIC three-player blackjack program to fit into the 4K Color Computer (2.6K of user memory), we were bound by established card-shuffling routines. These all created massive arrays and randomly shuffled them before dealing from the top of the array. This required a large amount of memory which was just unacceptable.

"We eventually settled on a totally new approach which is very short and efficient. The algorithm creates a deck of 52 cards in any order stored as a string variable, deals a card from the random middle of the deck, and then compresses the string to eliminate unnecessary search time.

"We saved even more memory by creating four identical decks (suits one through four) and dealing from the middle of a random suit at the expense of a slight delay at the end of the suits. The entire subroutine consumes less than 300 bytes (without remarks and optional printout subroutines) and deals as well as anything we've seen elsewhere. It was the key to making our BLACKJACK game a reality (available with MATH TUTOR on cassette for \$9.95 from

Rainbow Connection, plus \$2 shipping and handling)."

Here's the listing for this subroutine:

```

10 ' *****
11 ' *** CARD DEALING ***
12 ' *** SUBROUTINE ***
13 ' ***
14 ' ***
15 ' ***RAINBOW CONNECTION***'
16 ' *** SOFTWARE ***
17 ' *****
30 ' ESTABLISH 4 SUITS (DENOTED
    AS 1,2,3,4) IN ANY ORDER (A
    0 REPRESENTS A 10)
40 CLS:C=0:FOR S=1 TO 4:D$(S)="2
34567890JQKA":NEXT
50 ' DEAL CARD FROM RANDOM
    MIDDLE OF ONE OF 4 DECKS
    (SUITS) AND COMPRESS STRING
60 S=RND(4):L=LEN(D$(S)): IF L=0
    THEN 50: ' CHECK FOR EMPTY SUIT
70 V=RND(L):C$=MID$(D$(S),V,1):D
    $(S)=LEFT$(D$(S),V-1)+RIGHT$(D$(S),
    L-V):C=C+1:GOSUB80:IF C=52 TH
    EN30 ELSE 50: ' CHECK FOR END OF
    DECK
80 ' OPTIONAL DISPLAY OF CARD OR
    ENTRANCE TO BODY OF PROGRAM
90 PRINT@480,C$: "S.C:D$(S):PR
INT@0, "VAL SUIT", "# REST OF SU
IT":SOUND S#50,1:FOR D=1 TO 200:
NEXT:RETURN

```

the RAINBOW
PUBLISHED BY FALSOFT
5803 Timber Ridge Drive
Prospect, KY 40059

Lawrence C. Falk -- Editor

The RAINBOW is intended for the personal use and pleasure of its subscribers and reproduction by any means is forbidden. Use of programs and information herein is for the single end use of subscribers and any other use is prohibited.

TRS-80, Color Computer and Extended Color Basic are trademarks of Tandy Corp.

All programs herein are distributed on an 'as is' basis, without warranty.

Subscriptions to the RAINBOW are \$12 per year in the United States. Canadian and Mexican rates are \$16 per year. Surface mail to other countries is \$26; air mail to other countries is \$44, due to postage costs alone.

Limited back issues available for \$2 each, plus \$2.50 for shipping and handling.

Payment accepted by cash, check, money order, VISA or MASTERCARD. Please include account number, expiration date and your signature when using bank cards.

The RAINBOW is published every month of the year.

CHECKBOOK BALANCE

Oh yes, its that time of the year again. By THAT time, we mean, of course, time to start worrying and figuring on the old income tax!

We do hope that the January issue of the RAINBOW beat your "custom prepared" package of income tax forms to your mailbox. If so, you can relax when the bad stuff comes because help is on the way. If IRS beat us ... now you can relax. Thanks to the RAINBOW.

With this program we begin a three-part series named, appropriately, MOM. Its short for "My Own Money" and will, we hope, help you at tax time and all through the year. And we think its appropriately named -- for Mom, who always told you "Don't worry about all that, Sweetie."

Well, don't worry about all that, Sweetie. The following program

will serve you well at this time of year, helping you balance your checkbook as all the holiday bills roll in. And, next month, we'll have a goodie which shows you how to set up a simple file to keep track of your income tax deductions. Finally, in March -- as the tax deadline begins to rear its ugly head -- there will be a program that will take the information you collect in the February program and do a rough computation of your income tax.

The following program, BANKER, is short and sweet. You simply need be armed with your checkbook and your bank statement. First, you enter your checkbook balance, and then your bank balance as it appears on your statement. Then, enter all the checks that have not cleared the bank, and their amount.

We've left room for 100 checks (and we hope there aren't that many) for you to handle. After the last check is entered, key in the word "END" and the program will move on to allow you to enter all deposits made

(Continued on Page 4)

colorcom/e

The ULTIMATE Color Computer Smart Terminal Program

LOOK AT THESE FEATURES:

1. FULL ONLINE AND OFFLINE SCROLLING, 1 OR 12 LINES AT A TIME.
2. SELECTABLE BAUD RATE (300, 600, 1200) AND PARITY. FULL OR HALF DUPLEX, TOO!
3. OUTPUTS ALL OR ANY PART OF RECEIVED TEXT TO PRINTER OR CASSETTE.
4. SUPPORTS ANY SERIAL PRINTER.
5. BUFFER AUTOMATICALLY OPENED ON START CHARACTER (12 HEX).
6. BUFFER AUTOMATICALLY CLOSED ON STOP CHARACTER (14 HEX).
7. READ MULTIPLE DOWNLOAD FILES FROM TRANSMISSION.
8. WORD MODE ELIMINATES SPLIT WORDS.

TO ORDER YOUR ROM-PAK, SEND CHECK OR M.O. FOR \$49.95 TO CONNECTION-80, BOB ROSEN, 93-15 86 DRIVE, WOODHAVEN, NY 11421. OR, YOU CAN CALL IN YOUR ORDER TO OUR BBS AT (212) 441-3755.

CONNECTION-80
OF WOODHAVEN
BOB ROSEN
93-15 86 DRIVE
WOODHAVEN, NY 11421

CHECKBOOK (Cont'd from Pg. 3)

but not credited. There is room for 10. Again, enter "END" when you are done.

Finally, if there is a service charge on your account, just add that when prompted to do so. The program will start calculating and will quickly tell you whether you show more, less or the same amount as the bank does. If you balance, you get a nice message.

If you do not have a printer, you can end the program after Line 270. If you want a printout and have the means to do one, enter in the whole listing. LP V11 users should note this program supports their printer. For LP V111 owners, change CHR\$(31) in Line 350 to CHR\$(27)CHR\$(14) and the CHR\$(30) in Line 360 to CHR\$(27)CHR\$(15). Those of you with other printers can either (1) turn on extended printing in Line 350 and turn it off in Line 360 with your own control sequences or (2) eliminate the CHR\$ references altogether.

Non-Extended Color Basic owners should note the STRING\$ functions can either be eliminated or changed to read PRINT "(and put 32 *'s marks here){.

Non-Extended users will also want to eliminate the references to PRINT USING in the printout section and eliminate Line 7.

The listing:

```
0 *****  
1 ** MANAGING OUR MONEY **  
2 ** (MOM #1) **  
3 ** (c) FALSOFT, 1981 **  
4 *****  
5 CLEAR1000:DIMCOS(100),CAS(100)  
7 FM$="$#,###.##"  
9 CLS  
10 INPUT "<ENTER> CHECKBOOK BALA  
NCE":CB  
15 INPUT "<ENTER> BANK'S BALANCE  
":BB  
17 CLS  
20 FOR X=1 TO 100  
30 INPUT "CHECK OUTSTANDING -- P  
AYABLE TO":COS(X)  
40 IF COS(X)="END" THEN 60
```

```
50 INPUT " AMOUNT OF CHECK":CA  
(X)  
52 PRINTSTRING$(32,45);  
55 Z=X:NEXTX  
60 CLS  
70 FOR X=1 TO 10  
80 INPUT "<ENTER> DATE OF DEPOSI  
T NOT ON BANK STATEMENT":DD$  
(X)  
90 IF DD$(X)="END" THEN 110  
100 INPUT "DEPOSIT AMOUNT":AD(X)  
103 PRINTSTRING$(32,45);  
105 Y=X:NEXTX  
110 CLS:INPUT "BANK CHARGES NOT  
SUBTRACTED BY YOU":BC  
200 ' *** CALCULATIONS ***  
210 FOR X=1 TO Z:TC=TC+CA(X):NEX  
T:FOR X=1 TO Y:TD=TD+AD(X):NEXT  
220 T1=BB-TC:T2=T1+TD:T3=T2-BC  
230 CLS:PRINT:PRINT " YOUR ADJ  
USTED BANK BALANCE IS ";:PRINT  
USINGFM$;T3  
240 PRINT  
245 TB=T3-BC  
250 IF TB>0 THEN PRINT "BANK SAYS  
YOU HAVE ";:PRINT USINGFM$;TB;:P  
RINT " MORE THAN YOU SHOW."  
260 IF TB<0 THEN PRINT "BANK SAYS  
YOU HAVE ";:PRINT USINGFM$;TB;:P  
RINT " LESS THAN YOU SHOW."  
270 IF TB=0 THEN PRINT "CONGRATS  
! YOU BALANCE!"  
300 ' *** PRINTER ROUTINE ***  
309 PRINT  
310 INPUT "WOULD YOU LIKE TO HAV  
E THIS PROCESS PRINTED OU  
T (Y/N)":ZZ$  
320 IF LEFT$(ZZ$,1)="Y" THEN CLS  
:GOTO330  
325 END  
330 INPUT "<ENTER> YOUR NAME":AS  
335 INPUT "<ENTER> TODAY'S DATE  
IN THE FORM MM/DD/YYYY":DT$  
:CLS  
340 PRINT#2224," THANK YOU. YOU  
R INFORMATION WILL NOW BE PRINT
```

ED OUT FOR YOU."

```
350 PRINT#-2,CHR$(31)AS " BANK R  
EPORT":PRINT#-2,"EFFECTIVE DT$  
360 PRINT#-2,CHR$(31):PRINT#-2:P  
RINT#-2  
370 PRINT#-2,"YOUR BANK SAYS YOU  
HAVE A BALANCE OF TAB(65);:PRIN  
T#-2,USINGFM$;BB  
380 PRINT#-2  
390 PRINT#-2,"FIRST, WE SUBTRACT  
ED THESE OUTSTANDING CHECKS:"  
400 FOR X=1 TO Z
```

80-U.S.

THE TRS-80 USERS JOURNAL

If you own a TRS-80® Model I, Model II, Model III, the Color Computer, or the new Pocket Computer, YOU NEED 80-U.S.!

The 80-U.S. Journal has

programs for your enjoyment and enlightenment. Every issue contains several Basic or machine language program listings. It contains Business articles and program listings. No matter where you are, there is something for YOU in the Journal!

and...

The Journal contains reviews of hardware and software. Our "Evaluation Reports" will help you make the best choice in selecting additions to your system.

Save Over 50%

You can save over 50% off the cover price of 80-U.S. Journal. For the remarkably low price of only \$16.00, a savings of \$20.00 (cover price), you will receive a wealth of useful information every month. As a special BONUS, if you enclose payment with your order, you will receive an extra issue for each year of your subscription order. Order three years of 80-U.S. and receive three extra issues! At no cost to you!

Is your
TRS-80
Lonely?

Write today for
our

"No Risk Offer"

SEND TO:

80-U.S. Journal
3838 South Warner Street
Tacoma, Washington 98409
Phone (206) 475-2219

Name _____

Address _____

City _____ State _____ Zip _____

Visa/MC _____

Exp. Date _____

1 yr. \$16 2 yrs. \$31 3 yrs. \$45

Please allow 6 to 8 weeks for your first issue.

GAME AIDS #2

CREATING FANTASY GAME CHARACTERS WITH STRENGTH AND WISDOM

By JOHN L. URBAN

Last month we discussed RND(0) and the RND(10) differences. The basic difference is in the number we get -- whether it will be a decimal or a "real" number. An example of this would be RND(0)=.49827879. You can see this action by running the following program:

```
10 PRINT RND(0)
20 FOR I=1 TO 100:NEXT I
30 GOTO 10
```

What you will see is a series of numbers, all less than one but more than zero. By letting this program run awhile, you will notice that sometimes a number like 6.88379014E -3 will be printed. Does this mean the number is greater than one? No it doesn't. NEW the program and run this one:

```
10 X=1: REM INITIAL VALUE OF X IS 1
20 X=X/2:REM DIVIDE X BY 2
30 PRINT X
40 IF X=0 THEN END: REM THIS SO WE CAN END WHEN 0 IS PRINTED
50 FOR I=1 TO 60:REM TO SLOW DOWN THE OUTPUT
60 GOTO 20: REM NOW THAT X/2 WE GO BACK TO LINE 20 TILL X=0
```

These types of numbers are referred to as "scientific notation." The "E" means "exponential," which is covered in the Extended Basic Manual to the degree I don't have to go into detail here. Suffice it to say that 6.88379014E -03 is actually .00688379014. The number is too small for the computer to print out. The -03 means the number is less than one and the decimal point moves three spaces to the left, with zeroes used to fill in blank spaces.

Now that we have RND(0) explained, how can we make it useful? Last month, I explained in detail the various ways to use RND(0). Briefly, to use it follow this formula: $X=INT(RND(0)*A)$ where A is the argument. This will create a number from 0 to the argument -1. For example, $X=INT(RND(0)*10)$ will return a number between 0 and 9. To produce a number from 0 to 10, change the 10 to 11.

But what about RND(10)?

RND(10) will produce a number from 1 to 10, not 0 to 10. Now that RND is explained, what do we do with it? And how does it apply to a FRP game?

In most FRP games, a character must be created with random rolls of a certain amount of dice. Perhaps

the dice required have six sides (like "normal" ones), perhaps more or less. Some games require more than one die be thrown. If we are required to throw three six-sided die, then the largest number possible is 18 and the lowest is 3. Therefore, our variable would be $X=RND(18)$. Next, we write a program that will display our random number on the screen.

```
500 GOSUB30000
510 PRINT X
30000 X=RND(18):RETURN
```

When we run this, we get a number from 1 to 18 and a message "7RG ERROR IN 30000". What the computer is saying is that it went to 30000 after the initial RETURN and then found that it could not return again, since it wasn't told where to

(Continued on Page 7)

AIDS (Cont'd from Pg. 6)
return to. To fix this, we must stop
it from going into line 30000 unless
we want it to.
So we add this line:

29000 END

It should run fine now.

But our program still has very
little use. Let's put in something
that would make a little more sense.
Change line 510 to read:

510 PRINT "STRENGTH="X

Now we have a program that will
determine at random what the strength
characteristic will be. Each time
the program is run, a new number is
chosen. Make a loop in the program
to print out five separate numbers.
Add these lines.

10 FOR I=1 TO 5
700 NEXT X

By running this program, we will
get five different numbers ... but
there is still something wrong. If
there are two digit numbers printed,
it looks fine. But if a number less
than 10 is printed, that number is
printed in the 10's column as it
should be.

By using PRINT USING, we can
make the numbers look a lot neater.
Add line 515:

515 PRINT USING "STRENGTH= ##";X

Now you will see 10 numbers, all
listed after "STRENGTH=". All the
two digit numbers look fine, but when
a number less than 10 is printed, the
first one is still in the 10's column
while the next number is in the 1's
column where it should be. Delete
line 510 and run the program. It now
produces five numbers, all lined up
nice and neat.

PRINT USING can be of great use
in a large number of applications.
(RAINBOW Vol. I No. 4 had an
extensive tutorial on this function.)
But, since we're concerned with FRP
games here, let's add:

520 GOSUB 30000

530 PRINT USING "INTELL= ##";X Page 7

Running the program again, we
now have 10 numbers in two separate
categories, Strength and
Intelligence. You can add as many
categories as you want, so long as
you get a random number from the
routine in 30000.

Now rewrite the subroutine with
these lines:

30000 X=RND(18)
30010 IF X<3 THEN 30000
30020 RETURN

Remember, we are using three
six-sided die. The lowest number we
can have is three (one on each die).
If the random number comes up at less
than three, line 30010 sends the
program back to 30000 to choose
another number. Some games, however,
require that when the largest number
is chosen (18 in this case) then a
percentile must be rolled. How can
we do this?

Just as in the change we just
made in our subroutine, we can
create what is now called a

(Continued on Page 13)

C. C. WRITER

WORD PROCESSING for the TRS-80 Color Computer

C. C. WRITER features Page Formatting, Block Moves, Tabs,
Sentence Deletion and Insertion, Global Search and Replace,
Centering, Indenting, Page Pause, ASCII Code Transmission,
Justification, Scrolling Review, and File Chaining.

16 or 32K version selectable at run time. The user may move
the repeating cursor anywhere in a sentence to insert,
delete, or change the text. The ASCII code feature combined
with powerful editing makes C. C. WRITER ideal for print
graphics and allows C. C. WRITER to drive any printer that
can be connected to the Color Computer. C. C. WRITER is
simple to learn but has powerful features.

Send for information or \$35.00 Check or Money Order for the
cassette and documentation to:

Transformation Technologies
BBC 2-i
194 Lockwood Lane
Bloomingdale, IL 60108

* TRS-80 is a Trademark of the Tandy Corporation.

DISK FILE CONVERSIONS

For those of you who are considering a disc system (with some of that left-over holiday money, perhaps?) but have just tons of programs using cassette input/output, never fear. The conversion is really simple.

As many of you know, the way to write to a cassette file is a simple procedure. You OPEN the file, PRINT the information into the file, and then CLOSE the file. To get your information back out, you simply OPEN the file, INPUT the information back into memory, and CLOSE the file again.

Essentially, when dealing with disc I/O, the procedure is the same in dealing with sequential files much like those you use on tape. With the disc, you OPEN the file, PRINT or WRITE the information, and then CLOSE the file. For getting information back out, you simply use INPUT, like the cassette, rather than PRINT or WRITE. OPENing and CLOSing are the same.

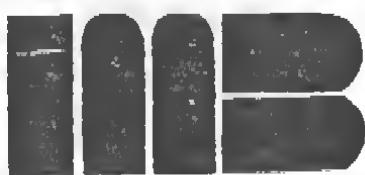
There are some things you have to do differently, and we're going to explain them here. That should help those of you who have discs. For those who plan to get one, it should be comforting to know a few quick edits will convert your tape files to disc files.

Tandy's Extended Color Basic manual has a discussion of "device" numbers beginning on Page 164. Well, these device numbers get a bit more significant when you upgrade to disc.

Recall that "Device -1" is the cassette recorder and "Device -2" is the printer. Now be told that "Device #1" is a buffer area in RAM memory that communicates with the disc drive. (Actually, there are 15 possible buffer areas, but that's another article.)

So, let's look at the method of opening a file for a cassette data print. The form is: OPEN "O",-1,"FILENAME". Now, to do the same thing on disc, the form is: OPEN "O",#1,"FILENAME". What could be more simple? All you need do is

(Continued on Page 17)



TRS-80[®] 16K
COLOR GAME
LIMITED OFFER!

FREE

WE'LL SEND YOU OUR BONUS GAME OF THE MONTH
WHEN YOU SEND US A SELF-ADDRESSED, STAMPED
ENVELOPE FOR OUR FREE COLOR PROGRAM LIST.

16K COLOR EXTENDED HI-RESOLUTION GAMES**

STARBASE ATTACK \$12.95

METEOR STORM \$12.95

STAR SIEGE \$12.95



HIGH SPEED ARCADE GAME

KOSMIC KAMIKAZE \$18.95

JOYSTICKS REQ'D

CERTIFIED CHECKS OR MONEY ORDERS ONLY



Illustrated memory banks

P.O.BOX 289

WILLIAMSTOWN, MA. 01267-0289

**CASSETTE

Please mention the RAINBOW when ordering

Rainbow Mountain Software
P.O. Box 5722
Raleigh, NC 27650

GRAPH LABEL ----- 16K-EXTENDED BASIC-- \$7.95
ALLOWS THE USER TO PLACE LETTERS AND NUMBERS ANYWHERE
ON A GRAPHICS SCREEN. CAN BE USED TO LABEL HIGH RES-
OLUTION GRAPHICS. PERMITS HIGH-RES. GAMES WITH TEXT
ANYWHERE ON THE SCREEN. FULL CURSOR CONTROL + MOVE
CURSOR ONE CHARACTER BLOCK OR ONE PIXEL WITH ONE KEY-
STROKE. FEATURES INCLUDE FULL ASCII CHARACTER SET,
(8X8 DOT MATRIX), SUBSCRIPTS AND SUPER-SUBSCRIPTS, AND
USER DEFINED CHARACTERS. PROGRAM IS CALLABLE AS A SUB-
ROUTINE, OR STAND ALONE. WORKS WITH ALL TWO COLOR
GRAPHIC MODES. LOWER CASE CHARACTER WITH DECIMALS.

TEXT EDITOR ----- 16K-EXTENDED BASIC-- \$14.95
FULL FEATURE TEXT EDITOR WITH UPPERCASE AND LOWER
CASE CHARACTERS. WITH UP TO 42 CHARACTERS LINES
DISMISSED ON THE SCREEN. ADJUSTABLE TABS, TEXT SEARCH
AND REPLACE, BLOCK MOVE, JUSTIFICATION AND PRO-
PORTIONAL STAGING WHEN USED WITH THE LP-VII.

C.C. PILOT ----- 4K OR 16K(ALL BASICS)--\$6.95
IMPLEMENTATION OF PILOT FOR THE COLOR COMPUTER.
FEATURES STANDARD PILOT INSTRUCTIONS WITH ADDITIONAL
EXTENSIONS FOR THE C.C. INCLUDES TEXT EDITOR AND INTER-
PILOT IN ONE PACKAGE. COMES WITH MENU PROGRAMS.

FAST GRAPHICS PACKAGE---(ALL MACHINES)--\$3.95
A MACHINE LANGUAGE PROGRAM THAT EXECUTES WITH TWICE
THE SPEED OF EXTENDED BASIC. INCLUDES LINE DRAWING,
SCREEN CLEAR, AND PIXEL SETTING ROUTINES. CAN BE USED
WITH BASIC OR MACHINE LANGUAGE. ENABLES THE 4K MACHINE
TO HAVE A 120x64 GRAPHICS DISPLAY WITH OVER 2K FREE
FOR A BASIC PROGRAM.

SHIPPING INCLUDED IN ALL PRICES

EDITOR NOTES (Cont'd from Pg. 1)

Mail also played havoc with stories. A couple of the ones we'd promised for this month were delayed. So, we're going ahead without them and plan to include them next month. As a result, February, the shortest month, will bring the biggest RAINBOW. As you will see from this month's issue, the amount of advertising is expanding. So, we can (and, except for the mail would have) print bigger issues.

By the way, we solicit articles for the RAINBOW. We will pay for significant ones. And, while we don't pay for the hint/tip type items, we hope you will continue to send them along. This payment for stories is new -- and somewhat modest thus far -- but we do want to bring you the best information about the Color Computer.

We want to lay a rumor to rest. We are not planning to raise our subscription rate at the present time. We're a monthly, have always been a monthly, and do not plan to

charge more to bring the RAINBOW to you on a monthly basis. We HAVE raised our advertising rates, because we're able to reach so many more of you. We will not raise subscription rates without giving you a chance to renew at the old rate of \$12 per year.

By the way, to echo Wayne Green (who publishes a magazine himself), let me encourage you to call the attention of the RAINBOW to any computer store at which you trade. We give a good percentage to retail outlets and the RAINBOW can be a money-maker for a lot of computer store owners. And remember, the more people who read the RAINBOW means a larger base from which to draw programs and the like for everyone.

Thanks for your support last year. We look forward to an even better 1982 and hope you will enjoy each day of it with us.



RAMCHARGER 32K UPGRADE

Space Invaders

Space War

- The Best Games Available
- High Resolution Graphics
- Fast, Machine Language
- Ext. Basic Not Required
- \$21.95 each, cassette
- \$25.95 each, disk

EXTENDED BASIC GAMES

- LOTHAR'S LABYRINTH Word Search Puzzle
- BATTLEFLEET Battleship Search Game (one or two players)
- SPACE TRADERS Galactic trading game

\$14.95 ea.

COLOR COMPUTER

COMPUVOICE TRS-80

Give your computer a voice of its own - build speech into your BASIC programs. This machine language program is a must for your library - no hardware modification needed. \$24.95

- EXTEND MEMORY FROM 16K to 32K
- 100% Compatible With Extended Basic
- No Soldering Or Modification
- Fits Inside Computer
- \$79.95

THE FACTS

At last a complete description of the "guts" of the Color Computer. Specs on all the ICs, complete schematics, theory of operation and programming examples. \$14.95

MADNESS & THE MINOTAUR

The best adventure game available for the color computer. Over 200 rooms, 6 creatures, 8 magic spells, loads of treasures. Written in machine language, extended Basic not required. \$19.95

NEW EXTENDED BASIC GAMES!

• SUBHUNT	\$14.95
• LASER ATTACK	\$10.95
• ALCATRAZ II	\$8.95
Complete with high resolution graphics and sound.	
• CROID	\$12.95
Eliza-type artificial intelligence game.	

OUNDSOURCE

Store music or voice from a cassette tape in the computer and display it on the TV screen. Shorten it, lengthen it, modify it and replay it through the TV's sound system. Build and test your own sounds for games. No hardware mods needed. \$24.95

UTILITIES

• EDITOR/ASSEMBLER	\$34.95
• SUPER MONITOR	19.95
• EPROM PROGRAMMER	89.95
(Program your own ROMs for the ROM-PAC port)	
• MAGIC BOX	24.95
Load MOD V/B Tapes into the color computer.	
• TYPING TUTOR	19.95
• TEXT EDITOR	

DEALER INQUIRIES INVITED

SPECTRAL ASSOCIATES
P.O. BOX 99715
Tacoma, Washington 98499
WRITE FOR COMPLETE CATALOG
ADD 3% FOR SHIPPING \$1.00 minimum
Allow 2-3 wks for delivery
(206) 565-8483
VISA OR MASTERCARD ACCEPTED

GET THAT GOBBLER!

From those wonderful people at Illustrated Memory Banks who brought you so much fun with ZELDA'S BAT BOTTLE just a short month ago now comes...OH, GOB!

If you're sick and tired of leftover turkey by this time of the year, here's a chance to help out a friendly turkey and yourself.

OH, GOB! lets you help the turkey by moving it through a field while a bunch of pilgrims...shoot at it. Use your joystick. Every time the turkey makes it safe, you score a turkey. If the turkey gets shot, the pilgrims score a hat. You have to save five turkeys before the top of the screen is filled with pilgrim hats to win.

As with ZELDA, we hope you'll pay attention to the fine BASIC graphics by Fred Scerbo of IMB (P.O. Box 289, Williamstown, MA 01267).

Two notes: Some Color Computers have trouble using the CPU speedup routine (RAINBOW Vol. 1, No. 1) which is contained here in Line 630. If yours is one of them, merely edit Line 10 to delete the GOSUB630 and delete Line 630. If the speedup works O.K., you will want to type POKE 65494,0 in command mode before saving the program to tape. Because of the speedup, type in the whole program before running it.

If the odds are too tough for you, then you can affect them by an edit to Line 280.

Have a good time with the gobblers!

The Listing:

```

10 GOSUB630:GOSUB470:GOTO30
20 X=JOYSTK(0):P=JOYSTK(1):RETUR
N

```

```

30 P$="C0R12L3U2NL6LUNL4UNL4UNL4
LUNL2UL2D2LD3LD8E2U4R5GFGDNL2LD
F2DR15L5D2HGHGHGHGNU6LNU6LHN4
LNU4LNU4GNUSLNUSLNUSLNUSLN4LNU3
"
40 C$="V3101L255BC"
50 D$="01L50C04L150B"
60 CLS(0):PMODE3,1:SCREEN0,1:PCL
S(5)
70 T$="C2NLUC4H2U3LND3R2D4UEND3R
D3NLCDNRUC4EUNHC2U2FNLCC3RD"
80 DRAW"S8EM126,92;C0"+T$
90 DIMT(19,27)
100 GET(114,72)-(134,100),T,G
110 PMODE3,1:PCLS(4):SCREEN0,1
120 DRAW"S20BM30,80;C3U10R8D10LB
BE2U6R4D6NL4BF2BR2U10R2D4R3U4R2D
10L2U4L3D4L2BR10U2R2D2GULBL20C1B
D3D10R8U6L4D2R2D2L4U6R6U2NL8R2R2R
8D10L8U10BF2R4D2L4U2BD4R4D2L4U2
BD4BR9U2R2D2L2BU3U7R2D7L2"
130 PAINT(32,70),3,3:PAINT(86,70
),3,3:PAINT(138,74),3,3:PAINT(32
,100),1,1:PAINT(86,100),1,1:PAINT
(138,100),1,1:PAINT(188,100),1,
1:PAINT(188,140),1,1
140 PMODE4,1:SCREEN1,1
150 DRAW"S4BM6,162;"+P$":LINE(6,1
72)-(15,180),PRESET,BF
160 FORI=30TO200STEP2:PUT(30+I,1
60)-(50+I,188),T,PRESET:PLAYD$:N
EXT
170 W=7.6:GOSUB310:GOSUB310
180 FORL=1TO10STEP3:CIRCLE(240,1
72),L,5:NEXT
190 FORL=1TO1000:NEXT:I=0
200 PMODE4,1:PCLS(5):SCREEN0,1
210 LINE(0,15)-(256,162),PRESET,
B
220 LINE(236,15)-(236,162),PRESE
T
230 FORK=30TO130STEP20:K$=STR$(K
):DRAW"S4BM4,"+K$+";"+P$":NEXTK:S
CREEN1,1
240 GOSUB340:GOSUB20:1FP<20THENG
OSUB380ELSE1FP>44THENGOSUB350
250 IF1=>200THEN260ELSEIFI<200TH
EN280
260 FORV=1TO10:PLAYD$:NEXTV:PUT(
226-S,164)-(246-S,192),T,PRESET:
S=S+28:IFS=>140THEN560
270 GOTO440
280 Q=RND(10):IFQ<9THEN330
290 W=RND(6):IFPP01NT(40+1,19+(2
0*W))=0THENU=1
300 GOSUB310:GOTO320

```

(Continued on Page 15)

PROCESSORS (Cont'd from Pg. 1)

words on paper, and, essentially, that is what word processing is all about. How easy that is, what you do to edit the words once you have "captured" them in memory and the like are what distinguish good word processors from outstanding ones.

The Color Computer's most simple word processor is a three-line program. And, if you want to get into this really inexpensively, just key this in:

```
10 INPUT A$  
20 PRINT#2,A$  
30 GOTO 10
```

That, my friends, is a word processor. And, frankly, it is as good as any typewriter you can buy -- and it came to you for only a \$12 yearly subscription.

But things can get messy when you want to change a word after it is printed. And that's where the real word processors come into play. And, if you want to set margins, top of form, indent easily or the like, you can't do it with our little program above.

Currently, there are four word processing programs available for the Color Computer. In an effort to sort things out, the RAINBOW obtained copies of each from the author and will compare them here. If you have to do any word processing -- whether it is a letter every once in a while or preparing a church bulletin each week -- there is something here for you.

Each of these programs is a bona fide commercial version which you can purchase. None are "under development," although the authors have shared plans for the inclusion of certain features which we will pass along and clearly identify. But, we firmly believe word processors are a good tool to have, and we encourage you to choose the one which meets your needs the best.

The word processors currently available are (in order of cost): WORDCC7 (\$19.95), C.C. WRITER (\$30), TELEWRITER and TEXT EDITOR/WORD PROCESSOR (both \$49.95). Information to where to obtain them is located at the end of this review.

In evaluating word processors, there are four areas which are most important. These are display and input, editing ease, I/O capability and special features.

DISPLAY AND INPUT

How the word processor displays your typed-in copy is very important, because that is what you are dealing with in doing your writing and editing. Except for TELEWRITER, all programs use the "normal" display screen with its 32 characters by 16 lines format. All, also, allow the text to break up at the end of a line, or, break words in the middle as necessary. Since this is what the screen often looks like anyway, it isn't much of a problem.

TELEWRITER, however, is the only machine language program of the lot (although some of the others use M.L. subroutines). It creates a screen which is 51 characters wide by 24 lines long. TELEWRITER does not break words up, but pushes them down to the next line as you type. It makes for a very attractive and extremely readable screen display. While TELEWRITER's characters are significantly smaller than "standard" letters, there is little difficulty reading them with ease.

Both C.C. WRITER and WORDCC7 use a standard screen and reverse video for lower case. TEXT EDITOR blacks the screen, which makes it much easier to see the lower case letters. TELEWRITER uses true lower case formed letters, although without descenders.

As to input, you just start typing with both TELEWRITER and TEXT EDITOR, and keep typing until finished. With C.C. WRITER, you must

(Continued on Page 14)

TELEWRITER

Provides your COLOR COMPUTER with:

- REAL LOWER CASE CHARACTERS ■ A POWERFUL TEXT FORMATTER**
- 51 COLUMN X 24 LINE SCREEN DISPLAY ■ SPECIAL DRIVER FOR EPSON MX-80**
- ADVANCED CASSETTE HANDLING FEATURES ■ A SOPHISTICATED FULL-SCREEN TEXT EDITOR**

and requires absolutely no hardware modifications

TELEWRITER

Telewriter is a powerful word processor designed specifically for the Color Computer. It can handle almost any serious writing job and it is extremely easy to use. It has all the advanced features you need to create, edit, store, format and print any kind of text. With Telewriter you can quickly produce perfect, finished copy for letters, reports, term papers, articles, technical documentation, stories, novels, screenplays, newsletters. It is also a flexible and efficient way to take notes or organize ideas and plans.

51 X 24 DISPLAY

The Color Computer is an incredibly powerful and versatile computer, but for text editing it has some major drawbacks. The small 32 character by 16 line screen format shows you too little of the text and, combined with its lack of lower case letters, bears little resemblance to the way text really looks on the page. Reverse video in place of lower case just adds confusion.

Telewriter eliminates these shortcomings with no hardware modifications required. By using software alone, Telewriter creates a new character set that has real lower case letters, and puts 24 lines of 51 characters on the screen. That's more on-screen characters than Apple II, Atari or TRS-80 Model III. That's more than double the Color Computer's standard display.

FULL SCREEN EDITOR

The Telewriter editor is designed for maximum ease of use. The commands are single key (or single key plus control key), fast, and easy to remember. There is no need to switch between insert modes and delete modes and cursor movement modes.

Apple II is a registered trademark of Apple Computer, Inc.; Atari is a registered trademark of Atari, Inc.; TRS-80 is a registered trademark of Tandy Corp.; MX-80 is a registered trademark of Epson America, Inc.

You simply type. What you type is inserted into the text at the cursor, on the screen. What you see on the screen is always the current state of your text. You can move quickly through the text with one key cursor movement in all 4 directions, or press the shift key simultaneously for fast, auto-repeat. You can jump to the top or bottom of the text, the beginning or end of a line, move forward or backward a page at a time, or scroll quickly up or down. When you type past the end of a line, the wordwrap feature moves you cleanly to the next.

You can copy, move or delete any size block of text, search repeatedly for any pattern of characters, then instantly delete it or replace it with another. Telewriter gives you a tab key, tells you how much space you have left in memory, and warns you when the buffer is full.

FORMAT FEATURES

When it comes time to print out the finished manuscript, Telewriter lets you specify: left, right, top, and bottom margins; line spacing and lines per page. These parameters can be set before printing or they can be dynamically modified during printing with simple format codes in the text.

Telewriter will automatically number pages (if you want) and automatically center lines. It can chain print any number of text files from cassette without user intervention. You can tell it to start a new page anywhere in the text, pause at the bottom of the page, and set the Baud rate to any value (so you can run your printer at top speed).

You can print all or any part of the text buffer, abort the printing at any point, and there is a "Typewriter" feature which allows you to type straight to your printer. Because

Telewriter lets you output numeric control codes directly (either from the menu or during printing), it works with any printer. There's even a special driver for the Epson MX-80 that lets you simply select any of its 12 fonts and do underlining with a single underline character.

CASSETTE HANDLER

Telewriter makes cassette as simple to use as possible. It will search in the forward direction til it finds the first valid file, so there's no need to keep retyping a load command when you are lost in your tape. You can save all or any part of the text buffer, and you can append pre-existing files to what you have in the buffer already. You can abort an append or filesearch without harming the program or the text in the buffer.

Telewriter will maintain compatibility with popular Color Computer disk systems, but, since it makes using cassette almost painless, you can still have a powerful word processor without the major additional cost of a disk.

AVAILABLE NOW

Telewriter turns your Color Computer into the lowest cost hi-power word processor in the world today. It runs in 16K or 32K (32K recommended) and is so simple you can be writing with it almost immediately. It comes with complete documentation and is fully supported by Cognitec. Telewriter costs \$49.95 (California residents add 6% tax). To order or request more information write:

Cognitec
704 Nob Ave.
Del Mar, Ca. 92014

Or call (714) 755-1258 (weekdays, Saturdays, and early morning). We will gladly answer your questions.

AIDS (Cont'd from Pg. 7)

conditional flag. Here, again, we will use an IF ... THEN statement. We use them every day. For instance, when you're driving down the street, IF you see a red light THEN you stop. IF it is green, THEN you go on. This could be written IF LIGHT=GREEN THEN GO, ELSE IF LIGHT=RED THEN STOP. The same thing applies to programming. IF our strength=18 then we must find a way to roll a percentile. Add this line:

```
505 IF X=18 THEN GOSUB 40000
```

Now we write the percentile roll:

```
40000 Y=INT(RND(0)*101):
```

Don't press <ENTER> yet. We still must have some way of showing our percentile, and not show 18 twice. If we use a RETURN, then our percentile won't be printed. We also cannot make line 515 print out the percentile if the strength is less than 18.

To make sure the percentile will be printed when required, we must create a string.

To change the random number Y to a string, we use a STR\$ function. To separate this from our strength of 18, we must use a partition. I'll use "/". Add this to line 40000: Y\$="/*"+STR\$(Y):

This will add the "/" with STR\$(Y) to make a string. To print the percentile as the new strength, add

```
PRINT USING"STRENGTH= ##";X;;
PRINT Y$;RETURN
```

To insure that the strength is only printed once for each loop if our strength is 18, add to line 505: "GOTO 520". Now, each time your strength becomes 18, we will have a percentile roll.

You can experiment with this program and adapt it to your own use.

Next month I will expand the program to give a complete set of

CHECKBOOK (Cont'd from Pg. 4)

```
410 PRINT#2,TAB(5)COS(X)TAB(35)
;;PRINT#2,USINGFM$;CA(X)
420 NEXT X
425 PRINT#2,TAB(50)"-----"
430 PRINT#2,TAB(10)"THESE TOTAL
"TAB(50);;PRINT#2,USINGFM$;TC;;
PRINT#2,TAB(65)"-----"
435 PRINT#2," GIVING A TEMPOR
ARY BALANCE OF"TAB(65);;PRINT#2
,USINGFM$;T1
440 PRINT#2
450 PRINT#2,"NEXT, WE ADDED THE
SE DEPOSITS:"
460 FOR X=1 TO Y
463 PRINT#2,TAB(5)DDS(X)TAB(35)
;;PRINT#2,USINGFM$;AD(X)
467 NEXT X
470 PRINT#2,TAB(50)"-----"
475 PRINT#2,TAB(10)"THESE TOTAL
"TAB(50);;PRINT#2,USINGFM$;TD;;
PRINT#2,TAB(65)"-----"
477 PRINT#2," GIVING A NEW TE
MPPORARY BALANCE OF"TAB(65);;PRI
NT#2,USINGFM$;T2
480 PRINT#2
490 PRINT#2,"FINALLY, WE SUBTRA
CTED A SERVICE CHARGE OF"TAB(65)
;;PRINT#2,USINGFM$;BC
495 PRINT#2,TAB(65)"-----"
500 PRINT#2," THIS GIVES US A
N ADJUSTED BOOK BALANCE OF"TAB(6
5);;PRINT#2,USINGFM$;T3
505 PRINT#2,TAB(65)"====="
510 PRINT#2
520 PRINT#2," THIS COMPARES T
O YOUR CHECKBOOK BALANCE OF"TAB(6
5);;PRINT#2,USINGFM$;CB
525 PRINT#2,TAB(65)"====="
530 PRINT#2
540 PRINT#2," OR A DIFFERENCE
OF ----->"TAB(65);;PRINT#2,U
SINGFM$;TB
550 END
```

characteristics to more than one character and then store each of these characteristics in memory.

This being the second in the FRP series, I would enjoy hearing from you. Let me know what you think about the series, make any suggestions you'd like ... or just say "Hello." Send all comments via the RAINBOW.

Until next month. And don't let any red dragons step on your toes.

PROCESSORS (Cont'd from Pg. 11)

hit ENTER after each sentence (or group of short sentences). WORDCC7 functions much like a typewriter, with an audio "bell" sounding when you get to 56 characters in a maximum 60 character line. If you go past 60 characters, it automatically skips to the next line -- which can cause problems if you don't pay a little attention to it.

All four programs have some way to automatically indent for paragraphs, important if you are one of those people who wants to hit a "tab" key. The indent is a little more involved for the two less expensive programs. Frankly, we always just space over manually, anyway.

EDITING EASE

The three BASIC programs are all line oriented. WORDCC7 and C.C. WRITER give you the line numbers as you input each line with the ENTER key. TEXT EDITOR assigns line numbers, but doesn't display them while you are typing.

Since they are line-oriented, the three BASIC programs require you to know the number of the line you wish to edit or change. With TEXT EDITOR, the most simple way to do this is to print out a draft, which displays the line numbers. While C.C. WRITER allows you to print out a line-numbered draft, too, it will also allow a form of "scroll" through the text lines using a sophisticated function called "Lineseeker." The Lineseeker is very fast and very effective.

WORDCC7 also uses a form of scrolling, with line numbers displayed on the screen. In addition, all programs have a "global" find, which allows you to specify a certain text. Each will be displayed. This is a very handy option to use when you do not know the line number you want to edit.

TELEWRITER, on the other hand, uses a true scroll and allows the cursor to move anywhere in the text.

The editing is done on the display screen, without the necessity of going to an "alternate" screen.

Of the three BASIC programs, C.C. WRITER's editor is the most sophisticated and easiest to use. Its Lineseeker gets you where you want to go quickly, breaks the line apart using cursor controls, and then allows you to do what you want with the line. WORDCC7 and TEXT EDITOR use the "replace string" format, which means you type out the part of the line you want to edit, and then type in the edited version. This can require more typing, but is easy to use.

All four programs allow the basic editing functions to be performed with ease. And we're talking here about things like inserting or deleting lines or paragraphs, moving or copying blocks of text and the like which you can NEVER do on a typewriter. These editing features are so essential to effective word processing they are "standard" and all are handled well.

There is, in short, nothing shabby about either of these programs as far as the editing functions are concerned. They handle things quite well and do far more than is possible with a typewriter, no matter how good the typewriter is.

I/O CAPABILITY

All four systems are designed to be used with cassette tape recorders. The process is simple to save copy to tape in order to play in back at some other time. You can also keep an "electronic" file of your correspondence if you so desire.

The tape store and save features of all four programs are pretty straightforward. TELEWRITER, however, has an excellent cassette handler which eliminates one of our main objections to tape -- the necessity to find the start of a program (or a blank space on the tape) to avoid an I/O ERROR. TELEWRITER doesn't care were you start on the tape, it doesn't get

(Continued on Page 18)

GOB (Cont'd from Pg. 10)

```

310 CIRCLE(30,19+(20*W)),2,0:CIR
CLE(30,19+(20*W)),2,5:LINE(30,19
+(20*W))-(40+I,19+(20*W)),PRESET
:PLAYC$:COLOR5,0:LINE-(30,19+(20
*W)),PSET:RETURN
320 IFU=1THEN420
330 GOTO240
340 PUT(30+I,24+Y)-(50+I,52+Y),T
,PRESET:RETURN
350 I=I+2:Y=Y+8:IFY=>104THENY=10
4
360 IFI=>200THENI=200
370 GOSUB340:RETURN
380 I=I+2:Y=Y-6:IFY<=0THENY=0
390 IFI=>200THENI=200
400 GOSUB340:RETURN
410 GOTO410
420 PMODE4,1:SCREEN1,0:FORM=1TO3
:PLAYD$:NEXTM:PMODE4,1:SCREEN1,1
430 R$=STR$(R):DRAW"S4BM"+R$+",1
2:COR12L3U2NL6LUNL4UNL4UNL4L
UNL2UNL2D2LD3L2D2C5":R=R+15:1FR=
>255THEN560
440 LINE(30+I,16+Y)-(50+I,44+Y),
PSET,BF:LINE(236,15)-(236,162),P
RESET
450 U=0:Y=0:I=0:GOTO240
460 GOTO460
470 CLS(0):PMODE3,1:COLOR3,1:PCL
S(0):SCREEN0,1:LINE(20,8)-(234,9
2),PSET,B:DRAW"S4BM0,20;U8R6D4NL
6D4BR4U8F6D2UB"
480 COLOR4,2:LINE(28,16)-(60,84)
,PRESET,BF
490 LINE(68,32)-(104,84),PRESET,
BF:CIRCLE(86,32),20,2,.9,.52,.98
:PAINT(86,19),2,2:PSET(86,15)
500 LINE(108,32)-(144,84),PRESET
,BF:CIRCLE(126,32),20,2,.9,.52,.
98:PAINT(126,17),2,2:PSET(126,15
)
510 LINE(152,16)-(212,48),PRESET
,BF:CIRCLE(212,32),18,2,1,.77,.2
3:PAINT(215,17),2,2:PSET(230,32)
:LINE(152,52)-(212,84),PRESET,BF
:CIRCLE(212,68),18,2,1,.77,.23:P
AINT(217,53),2,2:PSET(230,68)
520 PMODE4,1:SCREEN1,1:FORV=1TO4
8STEP2:CIRCLE(50,144),V,B,.9:NEX
T
530 DRAW"S20BM120,130;C2U6R3FDGN
L3FDGNL3BR3HU4ER2FD4GNL2BR2U6F4D
2U6BRD5FR2EUSBR2R2F8L4NEDFR2FDGL
2NH8RSBD2"
540 DRAW"L7D4NR7D4NR7BLU8G3H3D8B
LU7HL4GD3NR6D4BLNL6U4NL3BU4L6D8"
550 SOUND200,4:FORV=1TO2000:NEXT
:RETURN
560 FORV=1TO10:PMODE3,1:SCREEN1,
0:SOUNDRND(200),1:PMODE3,1:SCREE

```

Software Review...

Page 15

BATTLEFLEET

BATTLEFLEET gives you a chance to fight a sea battle against a human opponent or to lock horns with one of the most crafty naval men afloat, Admiral TR580CC.

This fun game, written by Bob Sleath for Spectral Associates (141 Harvard Ave., Tacoma, WA, 98466, \$14.95) lets you deploy your naval force of nine ships in secret and then shoot missiles at your enemy, who does the same. The first person to destroy his opponent's force wins.

Ships can be deployed horizontally, vertically or diagonally. There are three classes of ships: carriers, battleships and cruisers -- each a different number of squares long. And, just because you might hit one of the occupied squares doesn't mean you destroy your opponent's entire ship -- you have to figure out which "way" the ship lies and zap each square in order to record a "kill." That can get pretty nerve-wracking.

BATTLEFLEET features two methods of play. In one, you fire missiles until you miss anything, and then the other side does the same. In the other, each of your ships gets to fire until it misses. The second version can get a bit fast and furious.

Different classes of ships are worth different amounts of points. And there's a scoreboard that keeps
(Continued on Page 17)

```

N1,1:SOUNDRND(200),1:PMODE4,1:SC
REEN1,1:SOUNDRND(200),1:NEXTV
570 DRAW"S8BM0,170;C0D3FRND2RENU
3BR3UERFDGLNHBR3U3DERBR2ND5UF4NU
4D2BR5UBUUR2UHL2GD"
580 W$=1NKEY$:IFW$="Y"THEN610ELS
EIFW$="N"THEN600
590 GOTO580
600 POKE(65494),0:CLS:END
610 R=0:U=0:S=0:I=0:GOTO200
620 REM 'OH, GOB!' BY FRED B. S
CERBO, COPYRIGHT (C) 1981, IMB, I
LLUSTRATED MEMORY BANKS, P.O. B
OX 289, WILLIAMSTOWN, MA 01267
630 POKE(65495),0:RETURN

```

MACHINE LANGUAGE AND YOUR DISC DRIVE

A number of you have written, or called, about some of the problems associated with loading machine language programs when the new Tandy disc drive is installed in the ROM slot.

This was mentioned in the December issue's review of the Tandy disc system. ...And...it CAN be a problem.

If you have machine language programs, and they are written in position independent code (which means they can run anywhere in memory), all you should have to do is relocate them in higher memory. If they were not written in position independent code, we suggest you contact the software manufacturer to ask for conversion assistance (and let us know what kind of help you get so we can alert others). Most machine language software is written so it can be relocated.

If you are writing machine language programs -- or programs with such subroutines -- we strongly urge you not to use any memory locations below 1000 hexadecimal. That will allow you to construct a program that can be used whether a disc is hooked up or not.

MEMORY (Cont'd from Pg. 19)

are times when I wish I had more, but then I sit down and pick my brain for a better way.

If we all voice our opinion and let it be known that we want better programs using less memory rather than being forced to expand in order to purchase or utilize a particular program, then this hobby (or, probably more appropriately, new technology) will grow and become much more fruitful.

Software Review...

COMPUMIND/JACKPOT

Rainbow Connection Software's Twinpack of COMPUMIND and JACKPOT contains a pair of good games written expressly for the 4K Color Computer.

Now don't let that throw you 16K and 32K people. At an extremely realistic price (\$9.95 for both from Rainbow Connection Software, 3514 6th Place NW, Roseville, MN 55901), these two programs are worth the money and can provide plenty of entertainment. For the 4K owner, COMPUMIND and JACKPOT go a long way toward solving the software search problem and, frankly, will do some of the things you had been wishing your machine was capable of doing.

COMPUMIND is like the Mastermind game and can really be addictive. You guess a secret number chosen by the computer and, in this case, get to select the number of digits the number will have. Much like Mastermind, the computer tells you whether the digits you guessed are the right ones and if they are in the correct position. Of course, it is up to you to reason this all out from the hints.

COMPUMIND gives you an evaluation of your prowess in each round and provides a composite rating as well. As the rounds go along, your rating gets better or worse depending on how well you do.

JACKPOT must have been written with insight into one-armed banditry. As in Vegas, Reno, Atlantic City or other similar places, the program seems to be trying to keep you "in" the game without letting you get very far ahead. Of course, you can hit the jackpot. Or go broke. With seven different possible symbols, you get "into" this one very quickly.

The program pays off for two of a kind and adds a bonus for three of a kind. There are noises and colors, too. In all, it is a very attractive game.

At five bucks each, these programs would be a nice addition to anyone's library.

CONVERT (Cont'd from Pg. 8)

change the "-1" to "#1" and it is converted.

To print or write data to cassette, the syntax is: PRINT #1, A,B,C. To do the same to disc, its: PRINT#1, A,B,C. In disc, you can WRITE as well as PRINT. There are differences which we won't cover here, but the point is that, again, you merely have to change "#1" to "#1" to make your conversion.

Closing the cassette file uses: CLOSE or CLOSE-1. With disc it is CLOSE#1. Simple again.

For inputting information from disc, the only changes, again, are essentially to modify the "-1"'s to "#1"'s.

In almost every case, no other conversion is necessary. The end-of-file "marker" is different in disc than in cassette, but, again, it is a simple matter of changing a few letters in a single program line.

Because access to the disc is so easy, its also simple to move your data files from tape to disc. What you will do seems a little complicated, but it really is not.

JARB SOFTWARE
1169 FLORIDA ST.
IMPERIAL BEACH, CA 92032

LASER STAR & HELO BATTLE.....	\$14.95
JARBCODE.....	\$14.95
PSYCHIC APTITUDE TEST &	
JARB RIORHYTHM.....	\$14.95
JARB PRINTER UTILITY KIT.....	\$14.95

Programs on quality data diskette with complete documentation.

COD orders accepted. For regular mail, please add \$1 for shipping and handling. California residents aff 6% state sales tax.

Call or write for free catalog of available programs. No collect calls please. (714) 429-5516.

All RAINBOW subscribers are eligible to deduct \$2 from cost of each program.

First, load the program which reads and writes the files onto tape simply by CLOADing it from tape and LOADing that program from memory to disc. Then, once it is on disc, modify it so that the input from tape remains the same but the output back to tape becomes an output to disc. Run the program. This should load the information into memory from your tape file. Then, using the modified part of the program, send the data not back to the tape, but to the disc. You should now have a duplicate data file on disc.

Now, modify the "front end" of the program to disc I/O like you did the output portion. LOAD that to the tape by another file name and KILL the old version of the program you placed there in the first place. Check to see if it works by then LOADing the program again from disc, using the new program to call up the data file from disc, and then sending the data file back to the disc.

In short, if you have concerns about the necessity of doing massive rewrites of your programs to make the I/O convert from tape to disc, then forget the concern. Its really just about as easy as 1-2-3.

BATTLEFLEET (Cont'd from Pg. 15)

track of all this. It can be displayed any time simply by pressing one key.

This is a good, fast-moving game that can involve a lot of suspense and drama. Better yet, it is a game of logic as well, because to win means you must reason out where your opponent's ships might be hiding. Since the current status of the sea is graphically displayed, you have some hints with which to guess.

There is color and sound, of course, and the play is simple yet engrossing. And, we might add, it is extremely difficult to beat the Color Computer. But it can be done.

For a shoot-'em-up that requires some thinking and logical deduction, we can recommend BATTLEFLEET.

PAGE 18 PROCESSORS (Cont'd from Pg. 14)

confused by the lack of a sync leader. This is a major advantage.

The three BASIC programs have the advantage that they can easily be converted to disc by the user. I have been successful in doing these conversions in just a few minutes. TELEWRITER, however, requires extensive knowledge of machine language programming before it can be converted. (The authors of TELEWRITER, TEXT EDITOR and C.C. WRITER are currently developing their own disc versions. I/O is much faster to disc, obviously.)

But I/O also concerns itself with printer communication. Here it is necessary to point out that WORDCC7 is the only program of the four which was developed for the Line Printer VII. The other three have embedded control codes for the Epson MX80. If you have an LP VII, you can run WORDCC7 without modification. However, C.C. Writer and TELEWRITER allow direct transmission of ASCII codes, which means you can get almost any function you wish, no matter which printer you have.

SPECIAL FEATURES

All four programs are just loaded with special features such as global finds, top of form, skip-over perforation, auto-centering and the like. In fact, the only drawback in any of them is lack of justification in TELEWRITER, but -- unless you really need it -- that's not as important as you might think. And, the author tells us he is working on adding this feature to the program.

We would like to spell out the qualities here which make each program unique. We'll try to highlight the most important considerations. If you have an application that is especially important to you, we urge you to contact the software author for detailed information.

TELEWRITER is truly a state of the art word processor. Because it is the only machine language program now available, it has features the others don't. In short, it is a splendid program and well worth the cost. Input and coding special functions are a breeze. Editing is as easy and as fast as is typing, and you get true screen displays and cursor controls to make all of this very simple. It is outstanding in every respect.

TEXT EDITOR is the only one of the programs which allows variable insert capabilities. This feature allows you to place a control code in the text and then "build" a letter around the variables. You then type a file of names and addresses, and the variable insert prints "personalized" letters automatically. Of the Basic Programs, its screen is most easy on the eyes because it blacks off the display for lower case.

C.C. WRITER has the best editor of the Basic programs. The Lineseeker function is extremely efficient and its ability to allow you to edit without requiring re-typing of a string is a big plus. It also allows you to imbed ASCII

(Continued on Page 19)

COLORTERM(c)

The 16K Color Computer® as an intelligent terminal with 51 or 64 columns by 21 lines and lower case!

- 300 or 110 Baud
- user programmable keys
- automatic repeat when key is held down
- dump your files to host
- reverse video
- partial screen clear
- 4-way cursor control
- any data format (commercial systems, TSO, bulletins etc.)
- memory buffer for incoming data—save buffer—scroll through buffer
- preserve a "window" of any size; new material scrolls through remainder of screen.
- encode data for more secure storage
- macro buffers for often-used output
- patch the 51 or 64 column display to your own programs running above 9168 (23 D0 hex)

Cassette and Manual \$34.95 (US), \$40.95 (Canada)

Master Charge, Money Order

Martin Consulting, 94 Macalester Bay, Winnipeg, Manitoba, R3T 2X5 Canada

TM OF TANDY CORP.

PROCESSORS (Cont'd from Pg. 18)

codes, so you can mix graphics and text on the printed page. This means you could print out a nicely designed letterhead if you wanted and then just start typing the letter.

WORDCC7 is the lowest-priced program of the four and is a perfect match for the printer for which it was designed, the LP VII. It is versatile enough to allow you to perform most of the functions you need in a word processor and every function is useful. It will perform yeoman-like service for you.

It is my belief that these word processors are priced just right, and the prices, in many ways, reflect their level of sophistication. At the top end of the scale, the tradeoff is an outstanding screen display and editing so easy it is hard to believe against variable inserts and justified text (in the current version). C.C. WRITER has the best editor of the Basic programs, but its screen display is not as easy to deal with. WORDCC7 is a low-end product, pricewise, but still has many excellent features. If you are looking for a word processor, you will have to determine your own needs and evaluate the tradeoffs.

All four programs come with excellent documentation, and all have authors willing to help you find answers to questions. TELEWRITER's documentation is first class (with a separate tutorial, an index and a command reference). C.C. Writer's Bill Dye has injected some good humor in his documentation, which integrates a tutorial and a system "card."

If you accurately base your purchase on your needs, you can't go wrong with any of these programs.

- WORDCC7 by Kathy Goebel, DSL Computer Products
P.O. Box 1113, Dearborn, MI 48121
- C. C. WRITER by L.W.C. Dye, Transformation Technologies, Inc 2-1, 194 Lockwood Lane, Bloomingdale, IL 60108
- TEXT EDITOR by John Matlo, P.O. Box 11224, Pittsburgh, PA 15238
- TELEWRITER by Howard Cohen, Cognitec, 784 Hob Ave., Del Mar, CA 92014

Commentary . . .

HOW MUCH MEMORY?

By Al Morgan

Of late, I have been somewhat shocked at the attempts to expand the Color Computer to memory limits not even recognized as necessary by mainframe computers. This alone is bad enough, but then to expound on a defamation of Tandy Corp. because the poor little CC cannot handle the load is quite unfair.

The idea that more is better is not only false, but ridiculous as well. Back in the 60s when I first started working with computers (in the Navy I might add), all we had were gears, rack and pinions and funny little gadgets called disc ball integrators.

Yes, these were computers. As the years went by and technology exploded, we evolved to the computer of today. The fact is most mainframes have about 32K to 128K.

This does not, of course, include the giants used for who-knows-what. At the other end of the spectrum, you have the Sinclair ZX80 with only 1K. And guess what? Programs are being developed in BASIC for even the ZX80 which are superior, programming-wise, to many of the ones for the other micros like the Color Computer.

Why is this? It is because more memory leads one into sloppy programming (of course, not in all cases). The answer does not lie in expanding memory for a specific computer but in utilizing mass storage devices like discs. I do understand the need to experiment, but let's all keep our heads while doing this.

Besides my Color Computer, I own an Apple II, a Heath H-89 and I work with an HP processor at work (no, I'm just a tech writer). Never have I run out of RAM. Sure, there

(Continued on Page 16)

Software Review...

GALLOPING GAMBLERS

If you like the ponies, or, for that matter, if you just like to like the ponies, GALLOPING GAMBLERS from Illustrated Memory Banks can be a great deal of fun.

Illustrated Memory Banks (P.O. Box 289, Williamstown, MA, 01267 for \$18.95) has the answer for those of you who like to visit the track but who don't want to spend your time going there. Just load in GALLOPING GAMBLERS from IMB and one to four players can enjoy the Sport of Kings.

In the high resolution version, you are treated to a bird's-eye view of the race track as the horses line up to post. You get to place your bets based on odds tabulated by the Color Computer and watch the horses take off. At the end of the race, the computer totes up your winnings, adds them to (or subtracts) your

losses from) your "kitty" and gets set for the next race. And IMB gives you a first class track, there are 12 races run every session (if your money and luck hold out).

This game is fast-moving and has the advantage of the excellent BASIC graphics we have come to expect from IMB. The program has enough color, movement and sound to keep everyone happy. Best of all, its something that four people can play at once ... and you can relax while the race is being run rather than having to operate the keyboard, joysticks or something else.

Additionally, the race itself is true-to-life. The "favorite" doesn't always win and sometimes a horse comes from back in the pack to make a stretch run. Its an interesting game that we believe you will enjoy.

Incidentally, joysticks are not necessary for this game.

Announcing WORDCC7

A Word Processing program for a 16K or 32K Extended Basic Color Computer with a Lineprinter VII*
FEATURES:

- Uses Both Print Sizes
- Global Editing
- Supports UPPER & lower case
- Easily User Modified
- Variable paper width
- Menu Driven

BEST OF ALL ONLY \$19.95

* Trademark of Tandy Corp.

Announcing MLRABBIT

A Tape BACK-UP Program for the Color Computer. MLRABBIT will copy any Machine Language or Basic Program (Tape Based) meant for use in the Color Computer. Works with any Memory size and either Basic. Completely automatic.
ONLY \$14.95

ALSO AVAILABLE:

16K Memory Chips	\$25.00
16 to 32K Solderless Upgrade Kit \$49.95
4K to 32K Solderless Upgrade Kit \$74.95

If you've spent any time at all reading about how the Color Computer works, you know that the more code our favorite machine has to deal with, the longer it takes to execute any function.

Even though the time involved can be very small for any program line, it can add up and slow execution down.

This situation is true for any type of line, even REMarks which, as you know, are very important in the documentation of any program.

Even the best of us "forget" exactly what we're doing where. REMark statements help us remember. And, the more of them the better, as far as documentation is concerned. But the lines do slow down the program. Catch-22? Sort of.

One way to handle this is to have two versions of the program, one with the REMarks and one without them. Then, you can go through the non-REMarked program and delete all the lines which have REMarks in them. It will speed up execution,

Silly Syntax

By Sugar Software

A hilarious and outrageous story game for one to ten players. This game will become one of your favorite to play and show off. Create your own stories with the built-in screen editor or order story tapes from the selection below. Silly Syntax features include creating, modifying, printing, saving and loading of stories. Included in the Silly Syntax game, two stories and the user guide.

\$19.95 - Requires Extended Basic.

Silly Syntax stories - Ten stories per cassette.

SS-001 -> Fairy Tales SS-004 -> Current Events
 SS-002 -> Sing Along SS-005 -> Gothic Romance
 SS-003 -> I-rated SS-006 -> Adventure/Sci-Fi

\$9.75 - 10% off for 3 or more story cassettes.

All products are available now.
 Ohio residents add 5.5% sales tax.
 Add \$1.00 per cassette for postage and handling.

Sugar Software
 2153 Leah Lane
 Reynoldsburg, Oh 43068
 (614) 861-0363

especially if your program is heavily documented.

Of course, it can be a lot of trouble to search through for the REMarked lines. Ah, who's that masked man on a white horse with a solution? None other than Jorge Mir of New Berlin, WI with a program called REM-D-LEET.

REM-D-LEET will search through your program and find all lines which begin with REM and print them out. You can then easily delete all those lines in command mode. It can make life a little more simple.

A few notes: (1) This only works with lines which START with REM. REMarks on a multi-statement line will not be listed. It also recognizes only "REM" not the abbreviation for a REMark, which is an apostrophe ('). (2) If you have a printer, you might wish to add "#-2," after the PRINTs in Line 30. (3) You should tack this on the end of the program where you want the REMs deleted. These line numbers are just an example.

Don't forget to delete REM-D-LEET from your program after its done its work.

Here's the listing:

```

1000 ****
1010 *****REM-D-LEET*****
1020 *****BY JORGE MIR*****
1030 ****
1040 P1=PEEK(25)*256+PEEK(26)
1050 P2=PEEK(27)*256+PEEK(28)
1060 B=PEEK(P1)*256+PEEK(P1+1)
1070 CLS:PRINT "REM STATEMENTS ARE LOCATED IN THE FOLLOWING
PROGRAM LINES:"
1080 PRINT
1090 A=B
1100 B=PEEK(A)*256+PEEK(A+1)
1110 IF B=0 OR B=>P2 THEN END
1120 FOR X=A+4 TO B
1130 IF PEEK(X)<>130 THEN 1150
1140 PRINT " ";:PRINT USING "###";PEEK(A+2)*256+PEEK(A+3);
1150 NEXT X
1160 GOTO1090

```



COMPUTERWARE®
products for
**COLOR
COMPUTER**

SOFTWARE

Color Invaders • Color Pac Attack • Monitor •
Adventure Games • Text Editors • Assemblers •
PASCAL • Magikube • Finance Programs • Color
Data Organizer • Graphic Games • Disassembler

HARDWARE

32 K RAM Expansion Board • 16 K RAM Set •
Cables • Interfaces • Power Pack ROM Cartridge
• Printers

ACCESSORIES

Books • Cassettes • Supplies • Service Manuals

Shipping from stock

Call or Write:



COMPUTERWARE®

Dept. C • Box 668
Encinitas, CA 92024 • (714) 436-3512

6809 Specialists

Computerware is a trademark of Computerware.

BACK ISSUES of the RAINBOW are expected to be shipped shortly after the first of the year. There was a slight delay in the printing schedule. Back copies can still be ordered, but once the printing is completed, no more back issues will be available -- except what is on hand.

COLOR DISK DRIVES are reported to be in pretty short supply. The way we hear it, an order for Drive 0 placed today may not be filled for 60 days. Drives 1, 2 and 3 are supposed to be running 90 days behind.

SPECTACULATOR, the ROM Pac that is supposed to be like VISICALC, is due to be available the end of December. Other ROM Pac availabilities, so we hear, are: Investment Analysis, March 15; Art Gallery, due in the Tandy Warehouse in mid-December; Color Scripsit, also December 15; the Editor-Assembler, February 28.

IF YOU BUY A RS PLOTTER, there's a free disc available that will enhance this \$1900 product. It supposed to be available in mid-December.

RS is quoting a 30 day delay on their 32K upgrade, if you don't buy it when you buy the computer.

LETTERS TO RAINBOW

Why no letters column? Simple.

With the delay by the USPS in getting the December issue out, and the slow mail for even first class, we just didn't get enough for the regular column. It'll be back next month -- obviously with more than ever.

The RAINBOW
5803 Timber Ridge Dr.
Prospect, KY 40059

Gentlemen:

YES! Sign me up for a one-year (12 issues) subscription to the RAINBOW. My \$12 is enclosed.

Name _____



Address _____



City _____ State _____ Zip _____

Check enclosed \$ _____	VISA account _____
Charge my _____	Mastercard account _____
CARD# _____ EXP. DATE _____	
SIGNATURE _____ INTERBANK# _____	

(Canadian and foreign subscribers please add additional mailing charge).

WORD PROC